Science Advisory Council

Meeting Summary – Fourth Meeting
March 18, 2009
Exchange Conference Center, Fish Pier, Boston

Science Advisory Council members present for the meeting:

Priscilla Brooks, Conservation Law Foundation
Todd Callaghan, MA Office of Coastal Zone Management
Anamarija Frankic, Environmental, Earth and Ocean Sciences, UMass-Boston
Kathryn Ford, Massachusetts Division of Marine Fisheries
Carlton Hunt, Battelle
Scott Krauss, New England Aquarium
Frank Muller-Karger, UMass-Dartmouth, School of Marine Science and Technology

Not Present:

Bill Schwab, US Geological Survey, Woods Hole
Jack Looney, UMass-Boston
David Terkla, UMass Boston

Meeting Summary

John Weber opened the meeting at 1:06 PM by thanking the Council members present for their participation. He reviewed the meeting agenda and topics for discussion, including:

1. Ecological Valuation Index update
2. Ocean Plan Goals, Strategies, and Outcomes
3. Science plan for evolution of ocean management plan

John provided an overview of the March 4 meeting with the Ocean Advisory Commission which focused on the document outlining goals, strategies and outcomes for the ocean plan. He explained that the approval of this document by the Commission was a major step forward as it sets the stage for the development of the draft plan.

1. Ecological Valuation Index update

John Weber thanked the Council members who provided comments on the draft concept paper for the ecological valuation index (EVI). He stressed the importance of the valuation protocol as part of the spatial component of the plan and explained that answers to comments and/or questions will be forthcoming as the details of the methodology are worked out. He explained that the EVI will be used as part of the process leading to the identification and protection of estuarine and marine life and habitat (SSUs). He proposed that that in the next one or two weeks a document addressing the questions and comments be sent to the SAC as an interim step in the process. The planning team requires an adequate period of time to develop and finalize a paper with the rigor that such a process entails.

John then explained that the draft paper had been sent for a quick peer review to three scientists from around the country with a variety of experience in this work – Andrew Rosenberg (University of New Hampshire), Larry Crowder (Duke University), and Don Boesch (University of Maryland) – in order to get their feedback. Their comments will also be included together with comments by other entities such as The Nature Conservancy and the Massachusetts Ocean Coalition.

The Science Council had the following questions:

Question: Will the SAC also see the next draft of the paper? Will you take comments? *Answer: The SAC will see the paper but we cannot promise that comments will be requested since this depends on the time line. However, we will endeavor to do that. The paper will ultimately become a technical appendix to the plan and therefore needs to be rigorous in its details as a stand-alone paper.*

This was followed by a brief discussion during which Council members expressed the importance that the next version of the paper be viewed by the Council; given the importance of the ecological valuation protocol and that even a minor error may have large consequences.

In answer to this, John stated that every effort would be made to make available the next version of the paper, probably be through email with a quick turnaround time for comments. He also suggested the possibility of other options for the Council to review the methodology without having the full paper.

John explained that the comments received to date from the Council and the peer group focused on EVI details; and that none indicated any fatal flaw in the concept. He asked the Council to keep in mind the many data gaps, sometimes large, that exist and that need to be taken into consideration.

Question: Prassede and Kathryn have been working on consolidating the rationale behind why data were included or not in the EVI. Will that be included in the final document? *Answer: Yes.*

Question: Is the EVI assigned to areas or datasets? *Answer: By area. Each 250m^2 grid cell will have an EVI based on its biotic and abiotic components.*

Question: Is the benthic information collected for the North Shore and other areas to be incorporated? *Answer: The USGS data on seafloor mapping has not been finalized for all areas within the ocean plan, and therefore the usSeabed data was used since it is available statewide.*

Question: There is no reference to climate change. Will considerations of this be included? *Answer: That issue is addressed in the goals and strategies document, as well as the science plan, as will be explained later in this meeting.*

Question: Did you get somewhat similar comments and responses to the questions included at the end of the draft document? *Answer: In general yes. Questions were mostly requesting additional information on how decisions were made in developing the EVI, the process used, the data incorporated, scoring.*

Question: How will temporal variations be included? *Answer: That is being addressed in two ways. First by taking a precautionary approach, e.g. whales are not in Massachusetts waters all year round to feed but protective provisions will be taken all year round. Second, the compatibility analysis has a temporal aspect in considering use-use and use-natural resource interactions.*

Question: How is biodiversity being addressed: *Answer: We are looking at a species richness metric potentially, but that may be difficult because of data limitations; the abiotic layers may serve as a proxy for biodiversity in a sense, taken as a whole.*

Question: If data for the entire area is not complete, it is not known whether the diversity in the north and south is the same. Are assumptions being made for areas that do not have data? *Answer: Benthic complexity has a lot of assumptions as it is based on physical data that is not yet completed.*

Question: How are data gaps being addressed? *Answer: They are being addressed through the Science Plan as will be explained later.*

Question: Will mitigation be applied for projects that may impact biological hotspots etc? *Answer: The ocean plan may include specific management measures regarding mitigation, and existing permitting processes have mitigation requirements. Monitoring and indicators will be included in the ocean management plan.EEA has a question for the Council: given the goals and strategies of the plan, and thinking about management approaches being considered, what should be the approach to indicators?*

Question: Have fisheries areas been mapped yet? *Answer: Yes, this was an effort of the fisheries work group; the regulatory aspect of commercial fishing is not included in the ocean plan.*

Question: One criterion that is bothersome is the naturalness/unnaturalness. There is no area in Massachusetts waters that could be defined as "natural". How is that being addressed? It may be better not to have too many criteria if they are not helpful. *Answer: It would be equivalent to a wilderness area in a terrestrial environment. Since the paper was sent we have been working on refining the protocol and have concluded that that criterion cannot be assessed at this time and has therefore been excluded.*

Comment: It may be more useful to consider modified/unmodified as this will include uses e.g. MWRA pipeline, drumlins, LNG pipelines, cables. "Physically modified" may also be more applicable.

Comments: Regarding the scoring for ecological valuation, it is important to consider endangered and threatened species. Certain places may be "special" because of one criterion only. It is important not to omit such places. *Answer: The Act says "identify and protect" SSUs. To this end we are working on a clear definition of SSUs –is it an area with a high EVI? Is it high EVI plus endangered and threatened species? The EVI's goal is go further than a baseline of endangered and threatened species and identify other species and habitats that are of ecological importance. In the plan, we need to be able to state how we defined the SSUs.*

Question: Would you consider "species of concern" as endangered? Federal "species of concern" are species about which there is not enough information to determine whether there are threatened or endangered. *Answer: That is currently being discussed.*

Question: How does this protocol differ from MARXAN? *Answer: MARXAN is a very fast decision-making tool that allows one to spatially maximize various ways of trying to reach a goal depending on the information input. It presents alternative scenarios.*

During a brief discussion the Council discussed ways of dealing with areas for which no data is available. It was felt that it would be a mistake to assign an erroneous EVI to an area for lack of information. Identification of gaps will help prioritize data collection measures for the next plan. In addition, the Council felt that missing data will be a limiting factor; such areas should not be assigned for "use" but suggested having "provisional EVI" due to these uncertainties. These uncertainties should be factored in and there should be a goal/strategy/outcome with a feedback loop indicating improvement in the ecological evaluation protocol and EVI over time. Another suggestion made was that assigning a "zero" will indicate missing data and can be accompanied by "IF/THEN" statements that serve to pull out cells where no data is available. In view of the questions and uncertainties that need to be clarified, the Council felt that the next draft should be provided for review.

2. Ocean Plan Goals, Strategies, and Outcomes

John provided some background on goals, strategies and outcomes for the ocean management plan. He explained that the Act provides the framework within which EEA has to operate, in particular the "Oceans 15", some of which are specific requirements while others are more general in their meaning. The plan has to be responsive to all of them and with the help of consultants (John Duff and Jack Wiggin) three main goals have been developed:

- Integrated management
- Good stewardship (sustainable economic development, protection of SSU areas)
- Adaptive framework for the plan moving forward

John then explained that the strategies are intended to describe the process to attain the outcomes. Some strategies address the spatial elements of the plan, e.g. minimize conflict with commercial fishing, and these refer to such spatial tools as the compatibility analysis. Additional strategies are non-spatial in nature and focus on management and coordination.

Question: What uses are being considered? "Other" needs to be clarified. *Answer: This refers to the uses allowed by the Ocean Sanctuaries Act as modified by the Oceans Act, i.e. renewable energy that is appropriately scaled and consistent with the plan, sand extraction for beach nourishment, cables (associated with renewable energy), aquaculture and fishing.*

Comment: Some strategies would be better labeled as objectives and can be a little confusing, e.g. minimize conflict is an objective. Adding objectives would bring one to the task level.

Comment: the term "floating zone" was not very appropriate. *Answer: Similar comments were made by the Commission at its March 4 meeting. He then explained that the concept behind "floating zone" is to develop use-specific performance standards for certain individual activities such as deep water aquaculture and cable for which it is difficult to predetermine a site by nature of the difference in scope and scale, species requirements, etc. John added that these performance standards will be limited and use-specific, rather than spatially-specific, and agreed with the Council that EEA needs to be careful about how to communicate to the public.*

Question: What is "deep water" in the term "deep water aquaculture"? *Answer: This has a specific connotation because of the way intertidal aquaculture is permitted (through existing programs at the Division of Marine Fisheries). A definition in the ocean plan will be included.*

Question: Are there going to be criteria and/or considerations for assigning use areas, based on other physical and policy or legal requirements? A document that discusses all the uses should be included. This should be an outcome. *Answer: Yes, with criteria stemming from work group reports, compatibility analysis, etc.*

Question: Will the Council review the criteria for use areas? What is the time frame? *Answer: The conceptual part of the compatibility analysis is being developed by EEA.*

Question: Is there a strategy that defines habitat value? This should be a strategy or an objective. *Answer: The habitat classification is one strategy that has a component of defining habitat value, but more details may be required.*

Question: Regarding effective stewardship, what does the word appropriate mean? *Answer: The word appropriate may be removed.*

The Council indicated that "education" and "public participation" are missing and should be included in the goals/strategies/outcomes. John explained that that issue will be addressed after the break in the next part of the conversation.

3. Science plan for evolution of ocean management plan

John introduced the last item on the agenda by explaining that the ocean management plan needs to include a section describing how the plan will evolve in the future: a science plan, a process to incorporate changes in management measures that may arise, and a public participation process. After reviewing the two initial documents relating to the science plan – a definition of the science plan's purpose, objectives and outcomes, as well as a table identifying issues and data gaps that need to be addressed through research and monitoring – the Science Council provided comments on the conceptual purpose for the science plan.

Question: What is meant by feedback loop provided by indicators? *Answer: We need a scientific component to the question of assessing if the ocean management plan is effective in achieving its goals (performance evaluation). As we learn more, scientific information will feed into management and policy; for example, if an areas has been identified as an SSU and some species move, we need to understand that and be able to respond.*

Comments/Questions: (1) There is a very interesting paper by Scott Nixon on ecosystem shifts in Narragansett Bay that may be attributed to climate change that may be helpful.

(2) It is very important to understand and define the concept of "ecosystem-based management," and we also need to use conceptual ecological/ecosystem models to understand the inputs, outputs and changes for the next plan.
(3) Where does "research" fit in? A Science Plan needs to be based on three strong elements – monitoring, research and assessment. These need to be included in the goals and called up for the public and ultimately for money providers.
(4) The questions that the science plan is aimed to inform need to be identified.

A brief discussion on education and public outreach followed. Some Council members felt that education needs to be an important component of the science plan to inform the public about actions to be taken, and outcomes – e.g., an educated public that promotes and sustains good stewardship. It is important to increase awareness and make provisions for dissemination of information as part of public outreach.

The Council also stressed the importance of increasing data availability that is informative and useable by managers, facilitating the integration of science research structure and management. For example, national park display areas are very good at communicating science to the public.

The Council also felt that the purpose and need of the science plan should be stated explicitly. The Council also indicated the need to include a component that will address anthropogenic stressors, and an operational objective should include identification of impacts of anthropogenic stressors (from a cumulative impact standpoint as well).

The Council next discussed the table summarizing data/information needs, which was organized to help identify the relationship between plan goals, management actions such as the EVI, and other important components of the plan.

Todd Callaghan explained that the table includes data gaps and refinement needs based on the work group reports. He explained that an important component of the exercise was to attempt to identify actions that can be achieved in the short-term (five years), the time when the plan needs to be revised. However, monetary resources and prime responsibilities were not considered at this point. He pointed out that different individual items in the table are linked, and that some projects feed into one another.

Question: Will these items be prioritized? *Answer: Yes. Council needs to let us know if they think certain issues are more important than others*.

Comments: There are some things on this list that may need to be done within a year. The 5-year timeframe may be a bit soft. An indication of "should" or "need" versus "can" will indicate urgency.

Question: If we have data that can inform management decisions, do we have to wait five years before plan can be updated? *Answer: We are addressing that. We do not want to only be able to do this every five years.*

Comment: It is important to establish reporting techniques. For example, every year we should have a science conference that discusses updates. It would also be useful to the process to draft a table of contents for the science plan.

Question: Can you make suggestions about more urgent things to be addressed? *Answer: Sea turtle habitat seems urgent, as well as habitat mapping and classification. In addition, the EVI process will identify gaps – how will these gaps be addressed?*

Members of the Council pointed out that some of the items on the list need to be more specific. In addition, some projects depend on others and follow each other. John explained that more details on the prioritization of actions and projects as well as sequencing some of the items will be developed. The Council also felt that the framework needs to be flexible to incorporate new uses and/or changes and that will help identify what data are available and what monitoring is required: this has to be a living and adaptive table. John agreed that some of the concepts are broadly defined and need to be refined. He also acknowledged that the table needs to include additional use-oriented items. It was suggested that goals and objectives may help specify some of these issues.

Comment: The list is missing a reference to oceanographic and meteorological observation system that link the ocean with land (e.g. circulation, river inputs, nutrient input from land). This is vital for the day-to-day management of resources.

Comment: It is important to consider drivers, such as oceanographic processes, that will help address broader issues.

Comment: Conceptual ecosystem models that can be applied for the future version of the plan will help identify gaps and needs. This will help in informing the public of the needs and resources available. Identifying which parts of the ocean plan are data-starved will help make decision where to invest resources.

Comment: It is important to identify proposed methodology as well as suggested actions. Methods may change and adapt to needs. It is important to catalogue programs already in place and how they may feed into this process, since that may help ensure that other agencies will sustain appropriate/desired monitoring programs.

The Council commented that regarding the plan boundaries, there is missing information around the land-sea interface. The Science Plan gives the opportunity to address that issue as that has always been a gap. John concurred and stated that it is a placeholder under the goal for "adaptable framework". Issues such as water quality, habitat alteration, degradation/enhancement are all issues related to the land-sea interface and this also links to climate change.

Comment: It may be useful to cluster the smaller pieces into larger issues as this will help identify links among the different components.

John then explained that this table is a conversation-starter and provisional. He invited the Council to provide input on issues that we overlooked such as education. During the next meeting prioritization will be addressed.

Comment: The timeline is worrisome. The specific topics are not meaningful on their own but multi-species surveys need to be considered. The feasibility of projects and their funding needs to be addressed and outlined in a way that puts different things in perspective.

John Weber explained that the broad approach is a start. This will be followed by refinement, prioritization and definition of projects before consideration of funding. Todd Callaghan then asked the Council to their thoughts about grouping certain projects. He also asked the Council to think about assigning them to existing strategies (or tools) in the ocean management plan. It was also suggested by the Council that "tool or strategy" may be renamed as "objective", and the Council asked for an annotated outline of this section.

Closing notes

John Weber closed the meeting by asking the Council for any additional comments to be sent by March 25 and said that the Council will be receiving the Science Plan documents discussed during the meeting by email. He ended by stating that the next Council meeting will be scheduled in about a month.

The meeting adjourned at 4.10PM.